ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

Building Bridges: Exploring Mathematics Teachers' Journey Through Cooperative Learning

Giovanni B. Saldo*[1], Atty. Velessa Jane N. Dulin, PhD[2]
[1]Lambontong National High School, Surallah, South Cotabato, Philippines
[2]Sultan Kudarat State University, Access Campus, EJC Montilla, Tacurong City, Philippines
*Corresponding Author e-mail: *giovannisaldo0814@gmail.com*

Received: 25 March 2025 **Revised**: 28 April 2025 **Accepted**: 29 April 2025

Available Online: 01 May 2025

Volume IV (2025), Issue 2, P-ISSN – 2984-7567; E-ISSN - 2945-3577

https://doi.org/10.63498/etcor293

Abstract
Aim: Cooperative learning is a teaching approach where students work together in small group groups to achieve learning goals. The main concern of this study is to investigate how teachers experience, implement, and adapt cooperative learning strategies in their classrooms. It sought to understand the challenges and growth opportunities they encounter, ultimately, contributing to more effective professional development and collaborative teaching approaches.
Methodology: A qualitative research methodology was used in the study, specifically Husserl's transcendental phenomenological design. Eight mathematics teachers were engaged in focus group discussions, interviews, and class observations. They were chosen through a criterion-based purposive sampling.
Results: Findings revealed twelve major themes regarding teachers' perceptions, practices, and challenges: Teacher lived experiences and affective reactions, group formation and lesson integration as contextual implementation practices, external contextual factors impacting implementation, diverse cooperative learning strategies and techniques, structured group organization, role assignment, and clear instructions, reflective practice and evolution of cooperative learning practices, beliefs about teaching and learning that shape cooperative practices, strategies to overcome implementation challenges, time management and scheduling challenges, classroom management, discipline, and noise, group dynamics and unequal participation, and communication and language challenges. Not all elements of cooperative learning are present in mathematics classes. Although there was a structure for cooperative learning, the challenges shared by the participants indicated that its implementation was inadequate.
Conclusion: From the findings, it can be inferred that when teachers implement cooperative learning, students are also engaged and excited to learn math lessons. Teachers used different strategies to increase students' engagement, foster collaborative learning, and enhance achievement in mathematics. Despite these positive perceptions, teachers faced challenges that hinders the successful implementation of cooperative learning. Thus, it is recommended that school heads and supervisors consider the professional development of teachers, specifically in cooperative learning. Math teachers are also encouraged to create and use successful teaching methods since they can serve as role models for other educators seeking to enhance their teaching-learning methods.

Keywords: Cooperative Learning; Mathematics Education; K to 12 Curriculum; Transcendental Phenomenological Study; Teacher Lived Experiences

INTRODUCTION

Republic Act No. 10533, also known as the K to 12 Basic Education Curriculum, was established to create a more globally competitive and comprehensive educational framework, better preparing students for higher education, employment, and entrepreneurship. An essential component of this framework is the enhanced mathematics curriculum, which highlights cooperative learning as a significant teaching and learning strategy. This approach has been recognized as a crucial aspect of mathematics instruction, as it is included as an indicator in the Classroom Observation Tool (COT) under the Performance Management and Evaluation System (PMES). This tool is used to

ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

assess teachers during classroom observations and to provide support so that they can deliver quality education to Filipino learners (DepEd Memorandum No. 017, s. 2025). In this premise, this paper explores mathematics teachers' perceptions and lived experiences in teaching using cooperative learning in their classrooms, a decade after the enhanced mathematics curriculum was established.

The integration of teaching approaches in the classroom is crucial for mathematics education. Without utilizing effective techniques, teachers may present information that fails to connect with students' interests. Strategies enhance engagement, connection, and enthusiasm in content delivery. Alias et al. (2017) found that teachers view cooperative learning positively as an effective learning practice. However, some equipment availability and school management improvements should be reviewed to make collaborative learning more effective.

Cooperative learning in the classroom involves students working in groups to accomplish a learning task. The teacher directs the task. Students work on the task with defined roles, such as reporter, spokesperson, researcher, or recorder. According to (Johnson et al., 2014) cooperative learning consists of five essential elements: positive interdependence, individual accountability, promotive interaction, social skills, and group processing. Positive interdependence means that students view their success as connected to the success of their group members. Individual accountability ensures that every student is responsible for their portion of the work. Promotive interaction involves students encouraging and supporting each other's efforts. Social skills, such as communication, conflict resolution, and leadership, are explicitly taught and practiced. Finally, group processing allows students to reflect on their collaboration and identify ways to enhance their teamwork.

Research shows that cooperative learning can lead to improved academic achievement, better relationships among students, and increased self-esteem. This approach fosters an inclusive classroom environment where diverse perspectives are valued, enabling students to gain not only knowledge but also skills in collaboration and empathy. As this highlighted in the study by (Sadeghi et al., 2024) investigated the effects of cooperative learning on high school students' mathematics achievement, self-efficacy, and anxiety. The study compared cooperative learning methods with traditional direct instruction. The results indicated that cooperative learning significantly enhanced students' mathematics achievement and self-efficacy while reducing mathematics anxiety. These findings suggest that cooperative learning not only improves academic performance but also positively impacts students' confidence and emotional well-being in mathematics.

One important theory that emphasizes cooperative learning as an effective teaching strategy is Social Interdependence Theory, primarily developed by Morton Deutsch in 1949 and later expanded by David W. Johnson and Roger T. Johnson. Social Interdependence Theory posits that the way goals are structured influences how individuals interact and the results of those interactions. In scenarios of positive interdependence, individuals understand that they can achieve their goals only if others in their group also achieve theirs. This concept forms the basis of cooperative learning: students collaborate, support one another, and share responsibility for each other's success. Johnson and Johnson applied this theory to education, demonstrating that cooperative learning—characterized by positive interdependence, individual accountability, promotive interaction, social skills development, and group processing—yields higher academic achievement, better relationships, and enhanced psychological well-being compared to competitive or individualistic learning environments.

Another relevant theory is Vygotsky's Sociocultural Theory, particularly the concept of the Zone of Proximal Development. This theory underscores the significance of social interaction in cognitive development. In cooperative learning settings, peers frequently assist each other in grasping concepts that would be too challenging to master independently, which aligns with Vygotsky's descriptions.

Implementing cooperative learning poses several challenges for teachers, despite its many benefits. One major difficulty is managing group dynamics, as students often have varying levels of ability, motivation, and communication skills. This variation can lead to unequal participation or conflict within groups. Additionally, teachers face the challenge of designing meaningful cooperative tasks that genuinely require interdependence, rather than simply dividing the work among students. A notable study addressing the challenges teachers face when implementing cooperative learning was conducted by (Buchs et al., 2017). It was found that while cooperative learning is recognized for its benefits, its implementation is often hindered by several factors. These include difficulties in aligning cooperative activities with the existing curriculum, time constraints for planning and execution, and challenges in assessing individual student contributions within group settings. Additionally, the study highlighted that teachers' beliefs about learning significantly influence the adoption of cooperative methods. Those who view learning as a teacher-centered process are less likely to implement cooperative strategies. The authors suggest that addressing these challenges requires targeted teacher education programs that focus on integrating cooperative learning into the curriculum and developing effective assessment techniques.

ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

Objectives

This study explored the lived experiences, perceptions, practices, and challenges in implementing cooperative learning of secondary mathematics teachers.

Specifically, this study addressed the following questions:

1. What are mathematics teachers' lived experiences and contextual factors in implementing a cooperative learning approach with secondary students?
2. What are the best practices for mathematics teachers when implementing cooperative learning in the classroom?
3. What challenges do secondary school Mathematics teachers face in implementing cooperative learning?

METHODS

Research Design

The researchers used qualitative method in this study. In particular, a transcendental phenomenological research design. Moustakas's (1994) transcendental phenomenology focuses more on describing the experiences of participants than on the researcher's interpretations. A key component of this approach is Husserl's concept of *epoche* (or bracketing). The investigator must set aside their own experiences as much as possible and adopt a fresh perspective on the phenomenon being studied, based solely on the descriptions of the lived experiences shared by the participants in the research project.

The primary aim of the phenomenology method in the study was to focus on studying human experiences, including how people conceptualize their lived, shared experiences (Braun & Clarke, 2013; Sokolowski, 2000).

Phenomenology concentrated on the perceptions and communications of teachers regarding their cooperative practices in teaching mathematics through in-depth interviews, focus group discussions, and classroom observations. This approach analyzed individual or developed cases from a small group of research participants (Braun & Clarke, 2013).

The Transcendental approach utilized in this study described the lived experiences of mathematics teachers implementing cooperative learning in their classes, which emphasizes the development of themes; thus, the research design is considered appropriate to be used in this study.

Population and Sampling

Participants were eight (8) Mathematics teachers of five (5) secondary schools in Surallah South District, Surallah, South Cotabato, for the first semester of school year 2024 – 2025. This number aligns with a qualitative study by Heystek and Terhoven (2015), who explored teachers' motivation for participating in professional learning communities and involved eight participants. The authors justified the sample size by emphasizing the depth of insights gained through detailed interviews, aligning with qualitative research principles that prioritize rich, contextual data over generalizability.

Instrument

A validated semi-structured interview guide with twelve open-ended questions translated in Filipino and FGD guide were used to gather data on the lived experiences and contextual factors of mathematics teachers who implement a cooperative learning approach with students. A panel of experts validated the semi-structured interview guide for content validity.

Data Collection

A systematic process in data collection was followed by the researchers. The interviews were documented with a video camera following protocols from Protacio (2021) and Sonza et al. (2022). Interview findings were validated through online focus group discussions conducted via Google Meet.

Data Analysis

Data analysis for this study followed Braun and Clarke's (2006) six-phase thematic analysis approach. First, data from interviews and reflections were transcribed and thoroughly familiarized through repeated readings. Initial codes were then generated systematically across the dataset, capturing significant features relevant to the research

ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

questions. These codes were organized into potential themes, which was reviewed and refined to ensure they accurately reflect the data. Themes were defined and named to clearly convey their essence and relevance to the teachers' experiences with cooperative learning. Finally, a coherent narrative was developed, supported by data excerpts, to illustrate how cooperative learning influenced instructional practices, student engagement, and professional growth. This rigorous, flexible method ensures a rich and credible interpretation of the qualitative data.

Ethical Considerations

To ensure the integrity and validity of the study, several ethical considerations were taken into account. The researchers secured permissions from the Dean of the Graduate School, Schools Division Superintendent, and School Principals of five different secondary schools. Letters of request to the teacher for interview were then distributed and signed to participate and provide valuable insights about the study. Consent letters were distributed to participants, allowing them to express their willingness to participate. Once approved, the researcher scheduled interviews with participants and arranged class observations. The researcher digitally recorded the interview responses for later verbatim transcription. Prior to recording, permission and consent were obtained to comply with the Data Privacy Act. Pseudonyms were used to maintain the anonymity of the participants during the document analysis. The collected data remained confidential, and only the researcher had access to the participants' interview responses. After serving their purpose, the gathered data was securely discarded.

RESULTS and DISCUSSION

This section provides an analysis and interpretation of the data collected from the study participants. The information is organized into themes, along with interpretations and implications for each. The presentation follows the order of the issues outlined in the statement of the problem.

1. **Lived experiences and contextual factors of secondary school mathematics teachers implementing cooperative learning**

Themes

Teacher lived experiences and affective reactions
Group formation and lesson integration as contextual implementation practices
External contextual factors impacting implementation

From the data, lived experiences and contextual factors revealed by mathematics teachers were categorized into three themes namely: teacher lived experiences and affective reactions, group formation and lesson integration as contextual implementation practices, and external contextual factors impacting implementation.

1.1 Teacher Lived Experiences and Affective Reactions

All participants reflect positive outcomes (increased student engagement, collaboration, and improved performance) and the inherent complexities and occasional setbacks observed in their classrooms. The participants shared their thoughts and feelings on their experiences on cooperative learning:

Cherry : "My experience…I am happy with it because I can see the students having fun … and it is less hassle…"
Leomel "My experience:…this approach boosts student engagement and fosters peer teaching…"
Aiza : "…my experience has been a journey of continuous learning and adaptation…"
Nerissa: "My experience…can be described as a roller coaster ride… there are positive effects and setbacks…"
Freddie: "My experie…I felt apprehensive because I was trained to use traditional methods…"
Rosalie: "My experince…I was drawn to cooperative learning because it could boost engagement… but chaos erupted during structured tasks…"
Jeany: " My experience…sometimes, it is difficult to implement cooperative learning because it requires more time…"

ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

Lanie: "My experience…when I implement this approach, students who know the concept teach their groupmates… resulting in higher achievements…"

Teachers who used cooperative learning sessions could shift their pedagogical methods and perspective from traditional lecture-based teaching to a student-centered approach (Tadesse, Asmare, & Mare, 2021). According to the study, CL pedagogies allow educators to grow professionally and significantly alter their responsibilities in HE classrooms.

Acharya (2023) emphasizes the value of teamwork and group projects in fostering greater comprehension, enhanced performance, and positive attitudes toward mathematics. Individual work and teacher-centered approaches are common components of traditional teaching methods, which may restrict students' participation and the growth of their mathematical reasoning skills. On the other hand, cooperative learning fosters a collaborative, interactive, and supportive learning environment by emphasizing peer engagement, active participation, and teamwork.

1.2 Group Formation and Lesson Integration as Contextual Implementation Practices

This theme reflects how teachers' structure and integrate cooperative learning in their lessons. Teacher participants shared their thoughts on planning and forming students' groups for cooperative learning activities as cited in the lines:

Cherry : "…one factor is the composition of the group and the strategy in grouping them…"
Leomel: "I mix students of varying abilities using random selection for informal activities and assign roles in formal settings."
Aiza : "I avoid random assignments and now use mixed-ability, interest-based, and rotation groups."
Nerissa: "…I form student groups by random selection; they count from 1 to 5…"
Freddie: "I determine the class size and use a purposeful grouping strategy."
Rosalie: "I usually form heterogeneous groups so that a fast learner motivates others."
Jeany: "I do not allow students to choose their groupmates; I assign groups randomly to ensure balance."
Lanie : "I consider grouping strategies like heterogeneous groups and adjust group size (2–3 for discussions, 4 for problem solving, 5–6 for projects). " Also, I implement cooperative learning during the 4A's phases…"

This theme reflects how teachers' structure and integrate cooperative learning in their lessons.

Haq et al.'s (2020) research showed how the suggested ITSCL framework dramatically improves student learning by fostering dynamic group formation, raising learning gains, and validating the value of a diverse group makeup in cooperative learning environments.

Students emphasized the importance of the cooperative learning process—particularly peer learning and social support—rather than simply focusing on the final outputs of group work. Findings suggested that repeated exposure to cooperative learning yielded benefits in terms of social interaction, peer learning, and transferable skills, even when the implementation did not fully align with the ideal framework for cooperative learning (Healy et al., 2018).

1.3 External Contextual Factors Impacting Implementation

This theme addresses external conditions that influence the implementation of cooperative learning. The raw statements shared by the participants:

Cherry : "Then, sometimes, there is a group conflict when there is a group member who has high mathematical skills; members who have low mathematical skills tend to opt to help or give answers to the group."
Cherry: "Another problem is the number of students in class and heterogeneous students. They have different abilities and skills in math, and the teacher finds difficulty in implementing cooperative learning."

ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

Jeany : "Besides, materials are not always available because of the lack of supplies given to us."

In Chakyarkandiyil et al. (2023) research finding, cooperative learning (CL) is extensive and well-supported by empirical evidence. However, its implementation in teacher education classrooms presents challenges. Many teacher educators are resistant to adopting CL and continue to rely on traditional frontal teaching methods. This resistance may stem from the difficulties that teacher educators perceive in applying CL effectively.

2. Best practices of secondary school mathematics teachers implementing cooperative learning in the classrooms

Best practices of mathematics teachers implementing cooperative learning in their lessons revealed the following themes: diverse cooperative learning strategies and techniques, structured group organization, role assignment and clear instructions, reflective practice and evolution of cooperative learning practices, and beliefs about teaching and learning that shape cooperative practices.

Themes

Diverse Cooperative Learning Strategies and Techniques
Structured Group Organization, Role Assignment and Clear Instructions
Reflective Practice and Evolution of Cooperative Learning Practices
Beliefs About Teaching and Learning that Shape Cooperative Practices

2.1 Diverse cooperative learning strategies and techniques

The participants shared that they use multiple methods to engage students and foster collaboration, with many emphasizing that Think-Pair-Share is especially effective. The following are samples of transcription:

Cherry: "Somehow, I usually applied Think-Pair-Share, then another is the jigsaw technique … explicit instruction."
Leomel: "In my cooperative learning approach, I incorporate peer tutoring as a key practice …"
Aiza: "I employ several key practices: clearly defined roles, structured activities, emphasis on communication."
Nerissa: "The best practices I have employed are group work and peer-to-peer interaction."
Rosalie: "I also applied the Think–Pair–Share strategy and group games" -
Jeany: "I implement cooperative learning effectively by ... establishing clear learning objectives and using structured grouping strategies…"
Lanie: "After grouping, I provide clear instructions, ask groups to assign roles … strategies I usually apply are Think-Pair-Share, group games, etc."
Cherry: "…out of the three strategies, the most effective is Think-Pair-Share."
Leomel : "Peer tutoring is a highly effective strategy."
Aiza: "…effective strategies include Think-Pair-Share; Jigsaw Activities; Group Problem Solving…"
Nerissa: "…assigning group roles helps students gain confidence…"
Freddie: "…the most effective strategy is The Jigsaw Method …"
Rosalie: "…the most effective is Think-Pair-Share to maximize participation…"
Jeany: "…effective strategies include Think-Pair-Share and Numbered Heads Together…"
Lanie: "Think-Pair-Share is effective … it consumes less time."

In Çolak's (2015) study, the post-test results indicated significant differences in outcomes based on students' learning preferences when using a deep learning approach. Students who favored cooperative and competitive learning styles significantly outperformed those who preferred avoidant, dependent, and participatory learning styles. Additionally, an analysis of the adjusted means revealed that students with avoidant dependent learning styles scored notably higher in surface learning. However, the post-test results showed no significant differences in surface learning scores on the various students' learning styles.

ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

2.2 Structured group organization, role assignment and clear instructions

This theme emphasizes the importance of deliberate organization when implementing cooperative learning. The raw statements of the participants stress that structure and clarity are key to ensuring accountability and balanced participation.

Aiza: "…Defined Roles: I assign specific roles within groups…"
Freddie: "I establish group roles, assigning roles such as leader, recorder, timekeeper, and presenter."
Jeany: "…Assigned Roles: Give each student a role to promote accountability…"
Lanie: "…after grouping, I provide clear instructions, ask groups to assign roles, and use a rubric and timer…"
Nerissa: "…the most effective strategy is assigning group roles wherein the teacher gives each student a specific role…"

The findings of Yadav's (2021) study assumed that both groups of cooperative learning, trial bunch one and exploratory group 2, were taught Hindi grammar using the cooperative learning strategy and the unique technique. Team Games Tournament was used to instruct exploratory group 1, and the Students-Team Achievement Division was used to instruct trial group 2. In terms of the students' academic performance, each of these approaches proves to be equally effective. There is a difference between the benchmark group and the trial bunch, but it is insignificant. The Student Team Achievement Division and the Team Games Tournament have contributed to the understudies' increased academic success.

2.3 Reflective Practice and Evolution of Cooperative Learning Practices

This theme reflects teachers' continual refinement of their cooperative learning strategies. The raw statements from all eight participants illustrate a process of ongoing adaptation and professional growth.

Cherry: "…the most effective method is group activity … then the teacher gives feedback and comments…"
Leomel: "…my practices have evolved significantly over time; I started with basic group activities and later incorporated structured peer tutoring…"
Aiza: "Initially, I provided too little structure; now I provide detailed instructions, scaffolding, and individual assessments."
Nerissa: "Over time, my practices have evolved to include careful planning, clear roles, and strategies to promote positive interdependence."
Freddie: "…cooperative learning practices have been refined based on observations, student feedback, and trial-and-error…"
Rosalie: "…previously, I traditionally delivered content; now I explicitly teach collaborative skills using a rubric…"
Jeany: "…from unstructured group work to clearly defined roles such as Facilitator, Recorder, Checker, Presenter…"
Lanie: "…previously, I grouped students randomly; now I use purposeful group formation …"

Judijanto (2025) emphasizes the integration of digital technologies, such as artificial intelligence and online platforms, with cooperative learning strategies. This reflects a shift towards more interactive and technology-enhanced educational practices. Judijanto (2025) discusses the implications of these trends for future educational methodologies and highlights the importance of addressing challenges such as technological disparities and effectively implementing digital tools in cooperative learning.

2.4 Beliefs about teaching and learning that shape cooperative practices

This theme encompasses the underlying pedagogical beliefs that inform how teachers implement cooperative learning. The raw statements from all eight participants showed that these beliefs played a critical role in

ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

shaping the design and delivery of cooperative learning activities. Participants' beliefs about teaching and learning, as they indicated in the following translated utterances:

Cherry: "My belief or my philosophy is Platonism. Mathematics is a fixed and unified body of knowledge discovered, not created…"
Leomel: "Learning is an active, collaborative process that influences my approach."
Aiza: "I believe in student-centered learning, where students actively construct their understanding."
Nerissa: "I believe that students learn best when actively engaged."
Freddie: "My belief about teaching and learning is that learning is a collaborative and active process."
Rosalie: "…beliefs about teaching and learning in cooperative learning encompass shared responsibility and active engagement…"
Jeany: "…my beliefs are: Real-World Application of Mathematics where students work on real-world problems…"
Lanie: "I believe teaching and learning is 'Students Learn by Doing' … students engage in hands-on activities…"

In the study of Ahonen et al. (2014), the results indicated that teachers acknowledged the importance of encouraging students to take an active role in their learning. However, they still primarily viewed students as passive participants in school activities. Interestingly, teachers saw students as more active participants in education outside the classroom, particularly in informal school settings. Additionally, teachers described themselves as transmitters of knowledge rather than facilitators of learning. Within their professional community, they often regarded themselves as reproducers of expertise instead of active supporters of student learning.

3. Challenges faced by secondary school mathematics teachers in implementing cooperative learning

The participants expressed the following themes on challenges they faced and strategies to overcome those challenges in implementing cooperative learning: strategies to overcome implementation challenges, time management and scheduling challenges, classroom management, discipline, and noise, group dynamics and unequal participation, and communication and language challenges.

Themes

Strategies to Overcome Implementation Challenges
Time Management and Scheduling Challenges
Classroom Management, Discipline, and Noise
Group Dynamics and Unequal Participation
Communication and Language Challenges

3.1 Strategies to Overcome Implementation Challenges

This theme represents the proactive measures teachers take to mitigate the challenges of cooperative learning. To improve group effectiveness, nearly all participants described concrete steps to address issues—such as creating structured activities, using time limits, and relying on clear role assignments. It is evident in the narrative of the participants:

Cherry: "I need to acknowledge that challenge. Have a plan of action. Ask for technical assistance..."
Leomel: "I overcome these challenges by streamlining group activities by providing clear instructions and using time limits."
Aiza: "Clearly Defined Roles, Structured Activities with Checkpoints, Explicit Communication Skills Instruction"
Nerissa: "I have overcome those challenges by carefully planning my lessons and setting rules."
Freddie: "I assign specific roles to ensure all students are actively engaged."

ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

Rosalie: "Participate in intensive courses and professional development... allocate sufficient time for planning..."
Jeany: "It is my responsibility to give time, use available materials, and maximize the allotted..."
Lanie: "I see that groupings are composed of fast, average, and slow learners; include participation points in the rubric..."

According to Ghaith (2018), teachers generally find the more concrete Jigsaw cooperative learning methods and the Structural approach to collaborative learning to be more aligned with their practices, less costly, and easier to implement. In contrast, the more conceptual methods, such as Group Investigation, Learning Together, and Creative Controversy, are considered equally important. The study also revealed that cooperative learning methods and strategies are valued despite challenges related to teacher knowledge, right execution, curriculum alignment, classroom overcrowding, time management, and school policies.

3.2 Time management and scheduling challenges

This theme shows that a major challenge identified by teachers is the limited time available to implement cooperative learning. Clustered themes include the short (45-minute) class periods, the time-consuming nature of planning and organizing group activities, and the resulting delays in completing lessons. The raw statements consistently reference the struggle to balance group work with curriculum coverage. It is evident in the narrative of the participants:

Cherry: "One of the time-related challenges is time allocation. The allocated time for each subject is 45 minutes only."
Leomel: "... one major issue is limited class time, which makes it difficult to implement group activities thoroughly..."
Aiza: "... Increased Planning Time; Activity Duration; Debriefing Time... "
Nerissa: "... managing group time, monitoring student behavior, and evaluating student work..."
Freddie: "... planning takes time... groups may not complete tasks within the allotted time..."
Rosalie "... sometimes cooperative learning could not be implemented; activity exceeds the time given..."
Jeany: "... we are given an allotted time of 45 minutes only, which is not enough..."
Lanie: "... pressure to cover a large amount of material... some groups consume more than the time frame given..."

A study by Buchs (2017) found that many teachers do not view cooperative learning as easy to implement. Over 40% of teachers reported using it occasionally, while only 33% incorporate it into their routine practice. Teachers expressed that they struggle, particularly integrating cooperative learning into lessons, managing time, and assessing students in this framework. Results indicated that, in addition to teachers' beliefs about learners' orientation predicting the use of cooperative learning, those who encounter difficulties with curriculum integration and time management tend to implement cooperative learning less frequently.

3.3 Classroom Management, Discipline, and Noise

Teachers frequently report difficulties maintaining discipline during group activities. This theme covers high noise, disruptions, off-task behavior, and challenges managing large classes. The responses indicate that if not properly managed, these factors can undermine the effectiveness of cooperative learning.

Cherry: "... group conflicts and noise levels of students... large classes ... 45 minutes only..."
Leomel: "... difficulty monitoring off-task behavior in larger groups..."
Aiza: "... groups can easily get sidetracked from the assigned task..."
Nerissa: "... unequal participation, free riders, lack of focus..."
Rosalie: "... students in groups are very noisy... off-task behavior is observed..."

ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

Jeany: "... Off-Task Behavior & Disruptions: some students chat about unrelated topics..."
Lanie: "... conflicts among group members; classroom noise level..."

It is important to discipline students during classes; teachers should show appreciation for students or apply positive discipline. Amoah et al. (2015) highlighted that teachers were using judgmental and subjective behaviors, alongside evaluating disciplinary measures, to determine the most appropriate ways to address student misbehavior. They noted a change in teachers who began to use verbal encouragement instead of demotivating their students. Rather than relying on punishment, teachers preferred to motivate disengaged students to participate in classroom activities.

3.4 Group dynamics and unequal participation

This theme addresses the internal dynamics of student groups. Clustered ideas include group conflicts arising from heterogeneous abilities, unequal participation with fast learners dominating while others remain passive, and free riding. The raw statements reveal that such dynamics are a recurring challenge, impacting the fairness and productivity of group work. It is evident in the narrative of the participants:

Cherry: "Group conflict – this can happen if group members are heterogeneous... some are hesitant to participate..."-
Aiza: "Unequal Participation because some students dominate group discussions while others remain passive..."
Nerissa: "Sometimes, not all group members participate"
Freddie: "... uneven participation..."
Rosalie: "Higher-achieving students may take over most of the work"
Lanie: "... sometimes students who are fast learners answer the task while others are only listeners..."

Zamani et al. (2016) found that learners improved their performance through cooperation, whether working with stronger or weaker peers. However, heterogeneous grouping was more effective than homogeneous grouping for lower-performing students. In heterogeneous classes, students with lower abilities made more significant relative gains than higher-performing students in the same class. Importantly, the improvement of the lower-performing students did not come at the expense of the higher-performing students. Results indicate that cooperative learning can be particularly helpful for lower-performing students.

3.5 Communication and language challenges

Emerging theme 3.5 is a less frequently mentioned yet significant challenge: some students have difficulty effectively communicating their ideas, especially when required to present in English. This theme is supported by a specific comment regarding the medium of instruction and its impact on student presentations.

Cherry: "... Communication skills – since the medium of instruction in math is English, students find difficulties in presenting their outputs..."

Planas (2014) identified and discussed three language practices that emerged from the analysis of various classroom instances: (1) caution with mathematical vocabulary, (2) invention of terms, and (3) word-for-word translation. Each practice is represented by an example highlighting some contextual effects. The first two examples support the idea that experiencing language problems, whether factual or perceived, can create opportunities beneficial for mathematics learning. In contrast, the third example demonstrates how an excessive focus on language can impede mathematical understanding.

Conclusion

From the findings, it can be inferred that when teachers implement cooperative learning, students are also engaged and excited to learn math lessons. Teachers used different strategies to increase students' engagement, foster collaborative learning, and enhance achievement in mathematics. Despite these positive perceptions, teachers faced challenges that hinders the successful implementation of cooperative learning. Thus, it is recommended that school heads and supervisors consider the professional development of teachers, specifically in cooperative learning.

ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

Math teachers are also encouraged to create and use successful teaching methods since they can serve as role models for other educators seeking to enhance their teaching-learning methods.

Recommendations

Mathematics Supervisors and School Heads may understand teachers' experiences and difficulties and may consider the professional development that will help them overcome these obstacles. Additionally, future researchers may further investigate how specific training programs can equip teachers with skills to effectively implement cooperative learning addressing classroom management and group dynamics. They can also examine how technology can support and enhance cooperative learning in mathematics.

REFERENCES

Acharya, N. (2023). Overview of cooperative learning strategies in mathematics teaching and learning. *Innovative Research Journal* vol:3, issue:2, 12-december, 2023. https://doi.org/10.3126/irj.v3i2.61802

Ahonen, E., Pyhältö, K., Pietarinen, J., & Soini, T. (2014). Teachers' professional beliefs about their roles and the pupils' roles in the school. *Teacher Development*, *18*(2),177–197. https://doi.org/10.1080/13664530.2014.900818

Alias, S., Hussin, H., Hassan, J., Adnan, N. S. M., & Othman, M. H. (2018). Perception of teacher on cooperative learning. *MATEC Web of Conferences* 150(2001):05068. DOI: 10.1051/matecconf/201815005068

Amoah, S. A., Owusu-Mensah, F., Laryea, P., & Gyamera, A. (2015). Managing school discipline: The students' and teachers' perception on disciplinary strategies. *British Journal of Psychology Research*, *3*(2), 1-11. https://d1wqtxts1xzle7.cloudfront.net/45178564/

Buchs, C., Filippou, D., Pulfrey, C., & Volpé, Y. (2017). Challenges for cooperative learning implementation: reports from elementary school teachers. *Journal of Education for Teaching*, *43*(3), 296–306. https://doi.org/10.1080/02607476.2017.1321673

Chakyarkandiyil, N., & G. S. Prakasha (2023). Cooperative learning strategies: Implementation challenges in teacher education. *Problems of Education in the 21st Century, 81*(3), 340-360. https://doi.org/10.33225/pec/23.81.340

Clarke, V. & Braun, V. (2013) Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist*, 26(2), 120-123

Çolak, E. (2015). The effect of cooperative learning on the learning approaches of students with different learning styles. *Eurasian Journal of Educational Research, 59, 17-34.* http://dx.doi.org/10.14689/ejer.2015.59.2

Deutsch, M. (1949). A theory of cooperation and competition. *Human Relations, 2*(2), 129–152. https://doi.org/10.1177/001872674900200204

Ghaith, G. M. (2018). Teacher perceptions of the challenges of implementing concrete and conceptual cooperative learning. *Issues in Educational Research, 28(2), 385–404*. https://search.informit.org/doi/10.3316/ielapa.673295174450519

Heystek, J., & Terhoven, R. (2015). Motivation as critical factor for teacher involvement in professional learning communities in South African schools. *South African Journal of Education, 35*(1), 1–9. https://doi.org/10.15700/201503062354

Johnson, D. W., Johnson, R. T., & Smith, K. A. (2014). Cooperative learning: Improving university instruction by basing practice on validated theory. *Journal on Excellence in College Teaching, 25*(3&4), 85–118.

ETCOR Educational Research Center Inc.
SEC Reg. No. 2024020137294-00
Sta. Ana, Pampanga, Philippines
INTERNATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE
Website: https://etcor.org
iJOINED ETCOR
P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

Judijanto, L. (2025). Implementation trends of cooperative learning in digital learning environments bibliometric approach. *Sanskara Pendidikan Dan Pengajaran*, *3*(01), 41–51. https://doi.org/10.58812/spp.v3i01.514

Moustakas, C. E. (1994). Phenomenological research methods. *Sage Publications, Inc.*

Planas, N. (2014). One speaker, two languages: Learning opportunities in the mathematics classroom. *Educ Stud Math 87*, 51–66 (2014). https://doi.org/10.1007/s10649-014-9553-3

Republic Act No. 10533, Enhanced Basic Education Act of 2013, § 1 (2013). https://www.officialgazette.gov.ph/2013/05/15/republic-act-no-10533/

Ritchie, J., Lewis, J., Nicholls, C. M., & Ormston, R. (Eds.). (2013). Qualitative research practice: A guide for social science students and researchers (2nd ed.). *SAGE Publications*.

Sadeghi, V., Shahvarani, A., & Behzadi, M. H. (2021). The Effects of Cooperative Learning on Students' Mathematics Achievement, Mathematics Self-Efficacy and Mathematics Anxiety in High School Mathematics. *Journal of Informatics and Mathematical Sciences*, *13*(3), 129–141. https://doi.org/10.26713/jims.v13i3.525

Tadesse, T., Asmare, A., & Ware, H. (2021). Exploring teachers' lived experiences of cooperative learning in Ethiopian Higher Education classrooms: A phenomenological-case study. *Education Sciences*, *11*(7), 332. https://doi.org/10.3390/educsci11070332

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds. & Trans.). *Harvard University Press*.

Yadav, S.K. (2021). Study on the essential parts of cooperative learning. (2021). *Amity Journal of Professional Practices*, *1*(01). https://doi.org/10.55054/ajpp.v1i1.460

Zamani, M. (2016). Cooperative learning: Homogeneous and heterogeneous grouping of Iranian EFL learners in a writing context. *Cogent Education*, *3*(1). https://doi.org/10.1080/2331186X.2016.1149959